REMARKS

In view of the above amendments and the following remarks, reconsideration and further examination are requested.

By this amendment, the independent claims, i.e., claims 44, 48 , 52, 56, 60, 64, 68, 72, 76, 80, 84, and 88, have been amended as discussed below. Thus, claims 44-91 remain pending.

Claims 44-91 were provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 18-23 of copending application 09/677,421 in view of Takahashi. This rejection is traversed and is inapplicable to new claims 44-91 as amended.

Each of the independent claims has been amended to recite features of the invention directed to the novel conversion of first and second data streams to first and second modulated signals (PSK or QAM) to first and second Orthogonal Frequency Division Multiplexed (OFDM) signals and back. In this novel conversion process, the second OFDM converted signal is created to have an effective symbol part and a guard interval, and the first data stream is made to have an interval data including information of the guard interval of the second OFDM converted signal.

According to conventional OFDM schemes, the guard intervals are fixed and known by the receiving side. However, the conversion scheme of the present invention enables the guard interval to be selectable from a plurality of possible guard intervals of different time lengths. For such an arrangement according to the present invention, the receiving side must be informed of the guard interval. Thus, according to the present invention, the first data stream has interval data including information of the guard interval of the second OFDM converted signal. By including the interval data of the second OFDM converted signal in the first data stream, the receiver is able to produce the second data stream according to the interval data sent in the first data stream.

The Examiner rejected claims 44-91 under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 18-23 of copending application 09/677,421 in view of Takahashi. However, claims 18-23 of application 09/677,421 do not recite any of the above-mentioned features recited in the independent claims of the present application. Representative claim 18 of application 09/677,421 is as follows:

Claim 18 (09/677,421). A signal transmission apparatus comprising:

a modulator operable to assign each of a first data stream and a second data stream to a respective constellation in a vector space diagram to produce modulated signals wherein the number of signal points of the constellation for the first data stream is different from the number of signal points of the constellation for the second data stream; and

a transmitter operable to transmit the modulated signals,

wherein the first data stream has data for demodulation including the number of signal points of the constellation for the second data stream.

While the claims of application 09/677,421 recite features related to the first data stream including the number of signal points of the constellation for the second data stream, none of the claims in application 09/677,421 recite features related to the above-mentioned features recited in the independent claims of the present application, including features such as conversion of first and second modulated signals (PSK or QAM) to first and second Orthogonal Frequency Division Multiplexed (OFDM) signals, the second OFDM converted signal having an effective symbol part and a guard interval, and the first data stream having an interval data including information of the guard interval of the second OFDM converted signal.

The secondary reference Takahashi was relied on by the Examiner for IFFT conversion. However, the independent claims of the present application no longer recite such features. Moreover, Takahashi does not disclose or suggest the inventions recited in the present application, including features directed to conversion of first and second modulated signals (PSK or QAM) to first and second Orthogonal Frequency Division Multiplexed (OFDM) signals, the second OFDM converted signal having an effective symbol part and a guard interval, and the first data stream having an interval data including information of the guard interval of the second OFDM converted signal.

Accordingly, no obvious combination of the inventions recited in claims 18-23 of application 09/677,421 and the disclosure of Takahashi would result in the inventions recited in any of the independent claims of the present application, i.e., claims 44, 48, 52, 56, 60, 64, 68, 72, 76, 80, 84, and 88.

In view of the above amendments and remarks, it is submitted that claims 44-91 are allowable over the prior art of record and that the present application is in condition for allowance. The Examiner is invited to contact the undersigned attorney by telephone to resolve any remaining issues.

Respectfully submitted,

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